DOCUMENT RESUME

ED 389 772 UD 030 691

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TITLE Standards-Based Reform: What Does It Mean for the Middle Grades?
SPONS AGENCY Edna McConnell Clark Foundation, New York, N.Y.
PUB DATE Sep 95
NOTE 48p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; Course Content; Curriculum Development; Educational Assessment; *Educational Change; *Expectation; Intermediate Grades; Junior High Schools; *Middle Schools; Performance; *Standards; Urban Schools
IDENTIFIERS Goals 2000; Middle School Students; *Opportunity to Learn; Reform Efforts

ABSTRACT

This paper describes the status of the standards movement in relation to the middle grades and in terms of the policy context of the 1990s. It also outlines the potential of standards-guided reform at the middle level. By the early years of the 1990s, two key assumptions characterized the new wave of proposed reforms: that schools needed to reinforce their academic purposes through standards for curriculum and that these standards needed to apply to the learning of all students. The Goals 2000 Act provided a national context for reform and the application of educational standards. The standards movement today rests on content, performance, and opportunity-to-learn standards. In the middle grades these standards must be brought to bear in the various subject areas of mathematics, literacy, science, and social studies. The common thread that links emerging standards for the middle grades is the thread of learning and teaching for understanding. The status of national achievement and the academic experiences of middle school students make a clear starting point for thinking about the potential of standards for the middle grades. Standards-based reform can formalize high academic expectations for all students and set criteria for more challenging classrooms, more challenging learning, and more authentic assessment. (Contains 47 references.) (SLD)

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ED 389 772

STANDARDS-BASED REFORM:

WHAT DOES IT MEAN FOR THE MIDDLE GRADES?

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The Edna McConnell Clark Foundation

Program for Student Achievement

by

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September 1995

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TABLE OF CONTENTS

Introduction 1

Background 2

Current Policy Context for Standards-Based Reform 4

Emerging Content Standards for the Middle Grades: New Visions of Student Learning 11

Why Should the Middle Grades Pay Attention to Standards? 19

The Potential of the "Standards Movement" for Middle School Reform 24

Standards-Based Reform: "Adding Value" to Middle Schools 41

References 42

Introduction

For generations, good teachers have asked the questions "What do I want my students to know at the end of the year?" and "What do I want my students to be able to do with this knowledge?" In the mid-1990s, these questions are at the heart of educational debate and reform that reach beyond teachers' individual classrooms to engage entire schools and communities in the questions "What should all our students know?" and "What should all our students be able to do with this knowledge?" So phrased, these questions are now grist for discussions about policy and practice in education, including in the middle grades. These discussions involve teachers, political decision-makers, parents, and citizens in conversations in schools, local school districts, and professional circles.

Stimulated in part by the endorsement of National Education Goals and attendant funding, these conversations are beginning to yield proposed standards for "what all students should know and be able to do" as a result of their schooling. The emerging standards that are the fruit of these conversations will inevitably affect teaching and learning in the middle grades. Their effects will vary depending on the nature of the standards developed at different levels and on the context in which they develop. For example:

- As proposed standards are incorporated into textbooks and curriculum packages, they will influence the content of students' learning.

- As professional conferences explore the implications of the standards, teachers may deepen their understanding of learning processes and begin to translate standards into classroom teaching strategies.

- As educational policy-makers seek more precise ways of describing student achievement and measuring the effectiveness of school policies and practices, they may revise assessment instruments to reflect more closely the underlying orientation of new standards.

Together, such effects and others constitute what some call "standards-based reform."

Within the middle school arena, teachers, parents, and local decision-makers are looking for more information about this reform direction. In a rapidly changing political environment, they seek ways to engage in public discussion about the standards themselves. Some want to explore the implications of standards-guided reform for classroom practice and professional development. Others want to know what their young adolescent students stand to gain from reforms that evolve from the "standards movement."

This paper describes the status of the standards movement in relation to the middle grades and in terms of the policy context of the 1990s. It also outlines the potential of standards-guided

reform at the middle level. Subsequent papers will identify the challenges and dilemmas of standards-based reform at the district level, and identify promising strategies districts and schools are using to implement standards-based reforms.

Background and Policy Context of the Standards Movement

The attention to standards for students' education emerges from larger underlying questions that have surrounded American schools for a century: What are the purposes of the schooling we offer our young people? Can we create schools that will ensure all students equal access to valued knowledge? Do we believe all students can learn this knowledge and benefit from it? Our answers to these questions influence both what we teach and how we distribute opportunities to learn and use this knowledge to the students in our schools.

These questions stretch back over one hundred years. At the turn of the century, as educators contemplated the changing school population, some argued that only a few students were capable of appreciating a program that encompassed the study of literature, mathematics, history, and science, above and beyond the most fundamental literacy and computational skills necessary for the majority. Others disagreed. As early as 1892, Charles W. Eliot, President of Harvard University and Chair of the Committee of Ten on Secondary Studies of the National Education Association, reported his committee's belief that American schools were underestimating the capacity of its youth to benefit from an education in which the subject-area disciplines played a major role. He noted:

> It is a curious fact that we Americans habitually underestimate the capacity of pupils at almost every stage of education from the primary school through the university...It seems to me probable that the proportion of grammar school children incapable of pursuing geometry, algebra, and a foreign language would turn out to be much smaller than we now imagine (Oakes, p. 21).

The Committee of Ten's report set the parameters for a debate over the goals and structure of public schooling in a democracy that stretched through the years of immigration and the Great Depression and reemerged in the past decade. Thus, in the early years of the century, as schools attempted to accommodate an increasingly diverse student population, those who opposed the views of the Committee of Ten gained the upper hand of the debate. These advocates argued that a core curriculum was not for everyone and that a differentiated curriculum with different purposes for different students was more in tune with the needs of growing numbers of immigrant children, especially in urban districts. Buttressed by the growing use of intelligence tests, the comprehensive high school and its junior high school counterpart evolved in the direction of offering different programs for different student groups, with graduation diplomas reflecting this differentiation.
By the 1930's, high schools in New York offered up to eight different diplomas – Classical, Arts, Sciences, Engineering, Normal, Commercial Business, Commercial Secretarial, and General. Each reflected a different course of study reflecting the future destiny of students enrolled. Housing all

curricula under one roof represented a final compromise between those who believed that schools should offer a curriculum that emphasized the disciplines and those who sought an education deemed more "suitable" to their social standing.

Over the ensuing fifty years, the system of different curricula based on different expectations for different students became one of the salient characteristics of American public schools. The advent of specialized programs for high-testing students labeled "gifted and talented" in the late 50s and 60s and the opening of public schools to students with special needs in the 1970s attached additional layers to an already stratified curriculum that thinned out content for all but those considered "top level" learners. Despite the best intentions of educators, standards for courses of study and student work varied widely from one program to another, both within schools and across schools, districts, and states.

The application of different standards, expectations, and opportunities to learn to different student groups had profound effects on curriculum, learning, and school climate. For example, between 1922 and 1973, high school offerings cited in national surveys jumped from 175 to over 2,100 distinct course titles (Mirel and Angus, 1994). The increase in course choice, however, did not necessarily improve the quality of offerings; in fact, over these years, smaller and smaller proportions of students were taking fewer and fewer academic courses. Moreover, careful examinations of school curriculum at both junior and senior high levels revealed that courses often had a remedial cast to their content regardless of title, with little expected from students in terms of critical thinking, interactive discussion, generation of new knowledge, or quality of work (Goodlad, 1994; Powell, Farrar, and Cohen, 1995; Sizer, 1994). Observers reported that learning in entire schools seemed to rest on an unspoken treaty between students who tacitly agreed not to challenge classroom routines and teachers who implicitly agreed not to demand too much from students. Moreover, the catalog of courses offered in such "shopping mall" settings placed students in the role of consumers, leaving decisions about course selection, and given curriculum differentiation, level of work performance, in the laps of adolescents and, sometimes, their parents or guidance counselors.

The reforms that emerged in the first half of the 1980s as a result of the publication of *A Nation at Risk* (1983) touched only indirectly on these conditions. Arguing that poor student achievement put the country at economic risk, this report urged reforms that largely called for "more of the same:" increased requirements for graduation, longer school days, higher standardized test scores for grade promotion, and more testing overall for both students and teachers. By the end of the decade, these reforms had produced few gains, and reformers had begun to realize that such approaches failed to touch key elements of teaching and learning (National Governors' Association, 1990).

As growing numbers of educators began to realize that their "get tough" approaches to changing students through carrot-and-stick policies had made little impact on student achievement, some began to turn their attention to the task of changing curriculum and instruction instead. On a national level, these new efforts included the development of curriculum standards by the National

Council of Teachers of Mathematics (1989), a process that involved nearly a decade of work on the part of teachers and mathematicians working together. In contrast to the test-score "standards" of the minimum competency movement, these standards fostered an alternative vision of curriculum and raised expectations for student learning by defining what students should know and be able to do within that curriculum.

At the same time, during the 1980s, some individual schools had forged ahead with reforms that by-passed the "minimum competency" mentality and focused on classroom practices that would improve student achievement in a deeper way. In some districts, schools like Central Park East Elementary and Secondary Schools, a flagship of the Coalition of Essential Schools, were adopting practices that focused on actual student work rather than standardized test scores. In other districts, some low-income schools joined with the Accelerated Schools Network to enrich curriculum for all students, and ensure that all students made their exit from the elementary or middle grades performing at "grade level." Individual schools launched a course of study based on the promise of a liberal arts curriculum for all students as expressed in Mortimer Adler's *Paideia Proposal* (1982) or the views of E. D. Hirsch (1987). Still other schools began to offer all students a course of study that they had traditionally reserved for those students who they considered "top level."

Yet these "success stories" raised as many questions as answers. In particular, observers of public schooling noted that while individual schools could implement deep reforms, subsequent change in whole districts rarely materialized. In an effort to understand this phenomenon, policy researchers Marshall Smith and Jennifer O'Day (1991) identified barriers to broader school reform inherent in a highly fragmented policy context in which many short-term goals conflicted with each other to undermine lasting reforms. Based on this analysis, they argued for a "systemic" reform strategy founded on agreed-upon standards for "what students should know and be able to do," with leadership for establishing consensus on such standards vested in the states. Their widely circulated paper advocated "top-down" support for "bottom-up" reforms in teaching, curriculum and assessment, professional development, and accountability. This position grew out of teachers' work already in progress, especially that of the National Council of Teachers of Mathematics, and on the headway some states had made in developing curriculum frameworks that set out themes, topics, and objectives of study for the academic disciplines in specified grade spans.

Current Policy Context for Standards-Based Reform

By the early years of the 1990s, two key assumptions characterized the new wave of proposed reforms: that schools' academic purposes needed to be reinforced through standards for curriculum and that these standards applied to the learning of all students. Thus, guided by the National Education Goals forged under the administration of President Bush, the U. S. Department of Education awarded grants to professional organizations to develop academic standards that would shape curriculum reform. Then, in 1994, these same goals became formally embodied in the Congressionally-passed "Goals 2000: Educate America Act." This act, while not setting out standards themselves, provided a national context for reform by emphasizing that all students can

learn and that schools should push students to demonstrate this learning in specific subject areas. According to Section 102 of the Act:

> By the year 2000, all students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter including English, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography, and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our Nation's modern economy.

The Act authorized states to develop standards for these subject areas and provided resources for that purpose. That same year, the reauthorization of the Elementary and Secondary School Act as Title 1 of the Improving America's Schools Act of 1994 further strengthened this policy context. As this Act emphasized:

> The purpose of this title is to enable schools to provide opportunities for children serviced to acquire the knowledge and skills contained in the challenging State content standards and to meet the challenging State performance standards developed for all children. This purpose shall be accomplished by...ensuring high standards for all children and aligning the efforts of States, local educational agencies, and schools to help children serviced under this title to reach such standards (Public Law 103-382, Title 1, Section 1001, (d)(1)).

These legislative initiatives together gave states clear authority and resources to develop high standards and new assessments to complement them and monitor progress. Together, they implied a consensus that higher standards for student learning were in the national interest. Yet the stability of this consensus remains unclear. While states have emerged as the primary locus of decision-making about standards-based reform, Congressional support for both America 2000 and Title 1 legislation is tenuous. At the close of 1995, while many parties including governors, Congressional legislators, and Department of Education policy makers continue to support the development of standards, both the policy context and financial support for this work remain vulnerable to shifting political winds.

Moreover, even while they established apparent consensus about the value of standards-based reform, the legislative initiatives opened up broad opportunities for debate about standards themselves. What would constitute competency and how would students demonstrate competency in subject areas? Who would be involved in establishing standards within each state? How could a standards-setting process generate more effective ways of teaching and learning?

Vocabulary for Standards-Based Reform

For many, the term "standards" conjures up visions of new hurdles designed to sort the "more capable" from the "less able" students. For some, such standards hark back to a "toughening up" toward student behavior and performance without changing factors of teaching and learning. In contrast, "new standards" focus on standards as guides to curriculum, teaching, school and student assessment, and professional development.

Taking on the challenges of standards-guided middle school reform – those related both to writing standards and to pursuing standards-based change – begins with understanding the terms inherent in this new policy direction. The standards movement of the 1990s rests on three kinds of standards: content standards, performance standards, and opportunity-to-learn standards.

Content Standards

Content standards, defined as "what students know and are able to do," encompass two dimensions: (1) the knowledge and important and enduring concepts within a subject area and (2) the cognitive processes that foster the learning of that knowledge – those skills that allow students to use the information and concepts in a subject area to construct meaning and learn for understanding. Content standards proposed by Project 2061 of the American Association for the Advancement of Science, for example, include not only concepts basic to the physical, earth, and life sciences but also broad understandings in the areas of science as inquiry, science in everyday life, and science and technology.

Characteristics of Content Standards

In *Promises to Keep* (1993), the National Education Goals Panel (NEGP), a bi-partisan group of state and national officials, proposes "standards for standards" that can guide the development of content standards in states and districts. NEGP argues that content standards for learning that prepares students for citizenship, work, and life-long learning in the next century should be:

- Visionary

In the view of NEGP, content standards should set out the knowledge, skills, and other necessary understandings that schools should teach in order for all students to attain proficiency of learning in various subject areas. Content standards signal the destination of learning, not the road map, and in this respect, they differ from curriculum objectives or a specific course syllabus. Content standards reflect the most enduring, essential, or irreducible concepts in a discipline. Calling for "world class" standards, NEGP underscores the need for students to develop the depth and breadth of understanding that matches or exceeds the understandings of students in other countries.

- Inclusive of both subject-specific knowledge and the learning processes necessary to develop deep understanding of that knowledge

As envisioned by the National Education Goals Panel, content standards should go far beyond lists of facts of information associated with a discipline. They should rather incorporate the ways of thinking, working, communicating, reasoning, and investigating that emerge from the question "So what?" that emerges from the basic information. Within this context, the NEGP urges standards developers to consider not simply what students should know but what they should be able to do with that knowledge.

These learning processes cut across multiple disciplines so that content standards develop the skills and habits of successful learning that can help students apply understandings to "real life" tasks that rely on understanding in more than one subject area. As *Promises to Keep* notes:

> These skills and habits are what connect curriculum (the study of school subjects) to the purposes of schooling. They are intentionally developed and habitual behaviors that help students succeed in life, even after the knowledge base has changed. These habits include the abilities to study well, think logically, support assertions with evidence, draw inferences, and apply what is known to a new situation (p. 10).

NEGP urges that every review of every set of content standards attend to how well such standards are likely to cultivate these skills and habits.

- Grounded in enduring concepts, ideas, and themes of the discipline

Promises to Keep and others involved in standards-based reform caution against designing so many content standards that are so detailed that they reinforce a "coverage" mindset. Indeed, Graham Down, past-president of the Council for Basic Education, has noted that if content standards are to provide an intellectual focus for schooling, they should not result in loading down schools with too many requirements. Unlike traditional detailed curriculum objectives, content standards should be reflective of the "big ideas" and organizing features of a discipline – the scientific method or historical chronology, for example. They should balance depth and breadth of ideas, "spiraling up" with the grade spans to deepen students' understanding of themes through different developmental stages. Moreover, content standards should be able to incorporate emerging knowledge of a field into learning, so that the curriculum that derives from the standards is dynamic, not static.

- Assessable and understandable to parents, boards of education, and community members

Content standards that clarify curriculum and instructional goals should be assessable and suggest specific evidence – an essay, project, presentation, or examination – that will reflect subject

area content. This criterion in particular distinguishes content standards from broad goals or "outcomes" for learning. These criteria become especially important in persuading a community's many constituencies that standards-based reform holds promise for improving achievement. Standards that meet these criteria can reinforce the academic purpose of standards-based reform and serve as a means of strengthening schools' accountability to their constituencies.

For example, although many educators, parents, and community members hope that all students will become "responsible citizens," this outcome is difficult to measure or assess. However, students' knowledge and understanding of representative democracy, the separation of powers in the American system of government, or roles of citizens as community volunteers in a democracy can be assessed in a variety of ways. Moreover, assessable standards should readily translate into rich activities and student work products – projects, exhibitions, or essays – that schools can display to make the meaning of standards real to an audience outside the walls of the school.

- Applicable to all students

Over and over, *Promises to Keep* emphasizes that content standards outline the knowledge and learning that schools should make available to all students. Indeed, the National Education Goals Panel notes specifically the variability in schools, especially in providing access to valued knowledge, and note that disadvantaged students in schools of indifferent quality can benefit most from the framing of content standards. By formalizing higher expectations and clarifying instructional goals, content standards ensure that disadvantaged students have equal opportunity to learn important skills, concepts, and themes that form a foundation for further learning. At the same time, content standards also shift the direction away from the minimum competency standards of the past that have stifled learning for more advantaged students.

Performance Standards

In the lexicon of the standards movement, performance standards go beyond describing what students should do to demonstrate mastery in understanding information and concepts to defining how well students can understand and use the knowledge described in content standards. Thus, Goals 2000 describes performance standards as "concrete examples and explicit definitions of what students have to know and be able to do to demonstrate that such students are proficient in the skills and knowledge framed by content standards."

Schools and districts often begin to consider performance standards in terms of "Beginning," "Developing," "Accomplished," or "Exemplary" levels of accomplishment. These terms parallel language developed, for example, in Kentucky where educators have translated these levels of understanding into terms of "Novice," "Apprentice," "Proficient," and "Distinguished." (Although Kentucky does not have performance standards per se, they are "embedded" in the scoring guides or rubrics that Kentucky uses for assessing student work.) Further, examples of student work illustrate performance standards at different levels. Whatever the language, performance standards

are meant to describe students' work along a continuum, with the understanding that students can improve their work to attain improved levels of competence.

However, education leaders emphasize that performance standards should not be developed in the abstract. Rather, they derive from a process of reflecting on, discussing, and forming a consensus about the quality of student work in relation to content standards. For example, teachers may together compare their students' writing in math journals against standards for problem-solving, communicating, and reasoning mathematically. As teachers discuss each piece of work, they begin to form a picture of the characteristics of "exemplary," "proficient," "adequate," or "inadequate" work in relation to each expectation for learning.

While each piece of work may have some outstanding qualities, these qualities clustered together define the "exemplary" standard for all student work. This standard for the highest level of performance may be virtually out of reach for all but a handful of students. This result is in keeping with standards as "images of excellence." As Wiggins (1993) observes:

> Standards are always out of reach; that is the point. The standards of performance and the standards of self-discipline in one's work are always "ideals" for all but the world's best performers in every field. Thus I do not "expect" most people to meet the standards set by the best. My "expectation" is that everyone will strive to improve his or her work by studying what is best and working continuously to narrow the gap between the current level of performance and the ideal level of performance (p. 285).

Given this definition, schools engaged in standards-based practice will establish real student work produced in real classrooms, not short-answer test scores, as the basis for formulating performance standards. Indeed, as *Promises to Keep* notes, such examples of student work should *routinely* be made available to parents, students, teachers, and the public to make the meaning of standards real to all. Regular examination of student work is also a critical step in rewriting and revising standards for "proficient" and "exemplary" performance to ensure that standards are dynamic and reflective of new levels of student mastery.

Opportunity-to-Learn Standards

In the broad conversations about standards-based reform, debate over opportunity-to-learn standards (sometimes called school delivery standards) has been heated, both on national and local levels. On one hand, some have argued that such standards represent a powerful tool for leveraging equal educational opportunity in light of wide disparities in district-to-district and school-to-school resources, whether in basic materials or new technologies. In particular, these advocates argue that any accountability scheme tied to standards-based reform should be held up until such resources are equalized.

At the middle level, opportunity-to-learn standards – like content standards – should reflect what we know about the elements of schooling that contribute to success for young adolescents. Writing for the Carnegie Corporation of New York, Keating (1990), for one, outlines what these are. He notes:

> Students need to be engaged with meaningful material; training of thinking skills must be embedded in a knowledge of subject matter, for acquisition of isolated content knowledge is likely to be unproductive; serious engagement with real problems has to occur in depth and over time; students need experiences that lead to placing a high value on critical thinking, to acquiring it as a disposition, not just as a skill; and many of these factors occur most readily, and perhaps exclusively, when students have the opportunity for real, ongoing discourse with teachers who have reasonably expert command of the material to be taught (p. 77).

Some educators emphasize that given great disparities among schools and districts in curriculum content, content standards that apply to all classrooms themselves expand and reinforce students' opportunity-to-learn. As Porter (1993) argues, "The best predictors of student achievement that are within a school's control are the content actually taught, the instructional strategies used, and the standards for achievement evident in testing and grading." Yet the indicators to measure opportunity-to-learn may be difficult to pinpoint. As Shirley Malcolm, Chairperson of the NEGP's Standards Review Technical Planning Group for National Education Goals 3 and 4, writes in *Promises to Keep*, "Even the best prepared teachers working in environments rich in resources can have low expectations for students which directly affect opportunity to learn."

Given the uncertainty about ways to measure such "intangibles" as teacher expectations, content standards serve as proxy indicators for high expectations for learning. Further, at the school level, as Porter (1993) describes, teacher logs and questionnaires can reveal the amount of time that students are actually engaged in activities related to content standards. As Porter notes, such indicators become most useful in schools and districts that want to monitor curricular reform suggested by content standards and as the basis for collegial discussion focused on improvements in teaching and learning. Because some students will need more attention than others, an accounting of the extra time and support available to students at risk of failing represents another possible opportunity-to-learn indicator.

In addition, districts must take responsibility for ensuring that schools are providing opportunities to learn. Indicators of opportunity-to-learn at this level might include district commitment to intervene in schools that do not show evidence of student achievement; professional development opportunities designed to improve student achievement; wide and equitable availability of materials to help teachers effect teaching strategies that meet content standards and assist students in meeting performance standards.

Emerging Content Standards for the Middle Grades: New Visions of Student Learning

As the national professional associations have begun to release their proposed standards for what all students should know and be able to do, common threads have emerged that tie these standards together in ways that suggest new directions for teaching and learning. These new standards point to way to a vision long-held by those who have understood that America's citizens need an education that includes attention to higher-order thinking in addition to basic skills. For example, Benjamin Bloom (1976) has noted:

> A society which needs a large proportion of its citizenry who can solve complex problems, adapt to rapidly changing circumstances, develop verbal communication to a high level and learn complex new ideas relatively quickly must take steps to encourage these qualities in the early years of childhood and then provide systematic educational methods to develop these qualities to a high degree during the school years (p. 211).

In keeping with this vision, subject-area content standards represent an attention to learning as problem-solving, reasoning, communicating, and making connections, skills that correspond to Bloom's taxonomy of higher order skills. This emphasis does not imply that students will not know facts or learn skills of reading, writing, or computing; rather that the purpose of learning skills and facts is firmly grounded in situations that ask students to apply that learning to complex problems.

How do these standards play out for middle grades students in subject areas?

Mathematics

The National Council of Teachers of Mathematics *Curriculum and Evaluation Standards for School Mathematics*, released in 1989, represent eight years of work by hundreds of mathematics teachers at all levels of education. NCTM's efforts came out of a belief that standards could ensure quality in the teaching and learning of mathematics, indicate goals, and promote change. The math standards, then, reflect a consensus of what the profession values in mathematics education.

Standards proposed fall under the rubric of five broad goals: That students learn to value mathematics, become confident in their ability to do mathematics, become mathematical problem-solvers, learn to communicate mathematically, and learn to reason mathematically. These goals, in turn, evolve from mathematics educators assessment of the barriers to mathematical learning: irrelevant, routine curriculum; instruction that emphasizes computational facility at the expense of a broad view of mathematics as a vital subject; and textbooks that repeat topics at the same level of presentation grade after grade, with new material left for the end. Such practices put middle grades

students at special risk, the teachers note, because eighth graders are left without adequate background for the study of secondary mathematics.

NCTM's *Standards* for middle grades mathematics curriculum call for less emphasis on the rote aspects of mathematics learning so that teachers can introduce more students to the fundamental concepts of higher mathematics in earlier grades. As Ball (1992) suggests:

> We need to shift from an emphasis on computational proficiency to an emphasis on meaning and estimation, from an emphasis on individual practice to an emphasis on discussion and on ideas, reasoning, and solution strategies. We need to alter the balance of the elementary curriculum from a dominant focus on numbers and operations to a broader range of mathematical topics, such as probability and geometry. We need to shift from a cut-and-dried, right-answer orientation to one that support and encourages multiple modes of representation, exploration, and expression. We need to increase the participation, enthusiasm, and success of a much wider range of students (p. 47).

Standards for mathematics curriculum in the middle grades emphasize all of these domains. Standards do not propose more or less time on specific topics in mathematics, but suggest a different emphasis on different aspects of that topic for purposes of teaching and learning. Thus, for example, NCTM *Standards* for grades 5-8 propose that:

- In the area of number, operations, and computations, curriculum should put less stress on memorizing rules, algorithms, and procedures such as cross-multiplication, without understanding, practicing repetitive paper-and-pencil computations, and practicing rounding numbers out of context and more stress on develop number and operation sense, creating mathematical procedures, using estimations in problem solving and checking reasonableness of results, exploring relationships among whole numbers, fractions, decimals, integers, and rational numbers and understanding ratios, proportion, and percent.

- In problem solving, learning should involve less emphasis on practicing routine, one-step problems and more emphasis on extended problem-solving projects, formulating and investigating questions from problem situations, and

representing situations verbally, numerically, graphically, or geometrically.

- In algebra, curriculum should devote less emphasis to manipulating symbols, memorizing procedures, and drilling on equation solving and more emphasis on developing an understanding of variables, expressions, and equations and using multiple methods to solve linear equations and informally to investigate inequalities and other nonlinear equations.

The *Standards* also consider other domains of communication, reasoning, making connections, patterns and functions, statistics, probability, geometry, and measurement, and they accompany each with examples of the kinds of activities that will promote understanding and knowledge in each area. These reflect the *Standards* recommendations for instructional practices that actively involve students in exploring, conjecturing, analyzing, and applying mathematics in a mathematical and real-world context rather than teaching computations and drilling out of context or as isolated topics; use concrete materials for appropriate technology for computation and exploration, and assess learning as part of instruction.

Literacy

Despite a rocky beginning, the National Council of Teachers of English (NCTE) and the International Reading Association (IRA) have circulated draft standards for review in 1995 and plan to publish national voluntary standards by 1996. In the meantime, many states have moved forward to circulate their own standards for English/Language Arts and develop of curriculum frameworks, including themes and topics in the use of language. Typically, as in "Colorado's Model Content Standards," these standards envision that students will:

- Write and speak for a variety of purposes and for diverse audiences.

- Write and speak using conventional grammar, usage, sentence structure, punctuation, capitalization, and spelling.

- Read and understand a variety of materials.

- Apply higher-level thinking skills to their reading, writing, speaking, listening, and viewing.

- Read to locate, select, and make use of relevant information from a variety of media, reference, and technological resources.

- Read and recognize literature as an expression of human experience.

What does this mean for students in the middle grades? Definitions of reading levels established by the National Assessment Governing Board (NAGB) reporting results from the National Assessment of Educational Progress (NAEP) describe the level of learning that constitutes proficient reading. This "standard" for proficient performance – what NAEP (National Center for Education Statistics, ND) considers "solid academic performance and demonstrated competence over challenging subject matter" – reads:

> Eighth grade students performing at the proficient level should be able to show an overall understanding of the text, including inferential as well as literal information. When reading text appropriate to eighth grade, they should extend the ideas in the text by making clear inferences from it, by drawing conclusions, and by making connections to their own experiences – including other reading experiences. Proficient eighth graders should be able to identify some of the devices authors use in composing text (p. 4).

These expectations apply to reading of literature in which students identify the use of personification and foreshadowing; informative text, with students summarizing both explicit and implied information; and practical text, with students describing the purpose of the reading and supporting their views.

Further studies of developing literacy from NAEP's integrated reading performance record suggest the kinds of learning experiences that contribute to proficient reading and writing. Findings, while based on interviews with fourth graders, may have implications for literacy content standards for eighth graders. For example, according to NAEP (January 1995a) data comparing students' experiences in the top-third performing schools with those in the lower-performing third, practices associated with highest levels of reading included:

- Diversity of reading, including literature, magazines, and information books.

- Opportunities to write book reports, and in general, to respond to written text with their own writing.

- Students reading on their own for pleasure and opportunities for discussion with friends and family members.

- Students' self-selection of work for exhibition.

These findings suggest both the content of literacy programs in the middle grades as well as the skills and learning processes that will result in higher achievement. The National Center for Education Statistics (NCES, 1995b) also reports on additional research that suggests standards for literacy. For example, NCES reports that words read as part of a "meaning oriented" context, rather than assigned as lists to be "learned," offer students different kinds of reading experiences. And NCES (1995b) further notes, "This may be especially critical for students who are 'at risk' due to lack of experiences that help to develop their language abilities" (p. 54). Noting that accuracy in word recognition is only part of fluency in reading, researchers also note that modeling of fluent reading, and oral reading that focuses on the meaning of a text has proven especially successful in some classrooms. These findings, too, have implications for literacy content standards and are reflected in many of the emerging curriculum frameworks for the middle grades.

Science

Operating under the National Research Council of the National Academy of Science, the National Committee on Science Education Standards and Assessment is developing content, teaching, assessment, and professional development standards for all students, including grades 5-8. Standards in draft form explicitly state that the goal of the standards is to foster increased scientific literacy among all students, to use scientific principles appropriately in making personal decisions, experience the richness and excitement of knowing about the natural world, increase their economic productivity, and engage intelligently in public discourse and debate about matters of scientific and technological concern.

Realizing these purposes depends on learning facts as well as engaging in the learning processes of the sciences. Thus, standards focus on seven areas of science study: Science as inquiry, physical science, life science, earth and space science, science and technology, science in personal and social perspectives, and the history and nature of science. Traditional content – the concepts and facts of the sciences – is balanced with a focus on understanding the processes for developing new knowledge in science and applying science concepts in everyday life. This balance is flexible enough to accommodate emerging knowledge and theories, so that proposed standards foster a dynamic, not static, curriculum.

Moreover, proposed standards are interlinked, and the Committee stresses that schools should not eliminate any of the content. For example, to illustrate the connections among the standards, the Committee notes:

> [The standards of "science as inquiry"] cannot be met by having the students memorize the abilities and understandings. Rather, it can only be met when they engage inquiries to develop the abilities and understandings represented during investigations, lessons, and units that emphasize learning outcomes described in other content standards (p. V-73).

These standards, then, can guide curriculum developers to organize learning around more investigations, discourse, inquiry, reflection, and reasoning – learning activities associated with higher achievement. They can also guide teachers toward strategies that will reinforce this content for students in the middle grades. As the standards advise:

> Learning should engage students both intellectually and physically...Instructional approaches should engage students in the process of learning rather than transmit information for them to receive. Middle grades students are especially responsive to hands-on activities in tactile, auditor, and visual instructional modes (p. 67).

The thrust of emerging science standards reinforces what reformers have argued for decades: That learning science by rote can shortchange deeper understanding of the content. The attention to the life, physical, and earth sciences balanced with attention to learning processes such as inquiry or science for personal and social decision-making moves science learning away from memorization toward learning for greater understanding.

Social Studies

Released by the National Council on Social Studies in 1994, *Curriculum Standards for Social Studies: Expectations of Excellence* offers a "home" for other social science disciplines, including civics, geography, history, economics, and anthropology. The Council explains that the document is meant primarily for teachers – "the pivotal actors who shape the curriculum and effect change as they work with students" (p. 159).

The standards are designed as a framework for a social studies curriculum based on ten themes that roughly correspond to particular disciplines. These themes include Culture; Time, Continuity, and Change; People, Places, and Environment; Individual Development and Identity; Individuals, Groups, and Institutions; Power, Authority, and Governance; Production, Distribution, and Consumption; Science, Technology, and Society; Global Connections; and Civic Ideals and Practice. With a teacher audience in mind, the standards serve as a guide for curriculum decisions.

Each theme outlines "performance expectations" for each grade level. For example:

- For the theme "Time, Continuity, and Change," middle grades students are expected to "demonstrate an understanding that different scholars may describe the same event or situation in different ways but must provide reasons or evidence for their views," one of five expectations.

- For the theme "People, Places, and Environments," middle grades students are expected to "describe ways that historical events have been influenced by, and have influenced, physical and human geographic factors in local, regional, national, and global settings, one of eleven expectations.

- For the theme "Civic Ideals and Practice," middle grades students are expected to "explain and analyze various forms of citizen action that influence public policy decisions," one of ten expectations.

NCSS proposed standards also provide concrete examples of classroom practice, including up to three examples for each theme. Like standards in other areas, proposed social studies standards aspire to balance content with opportunities to demonstrate higher order thinking. As the *Standards* note:

> Teachers should not only expose their students to curriculum content but should also provide them with opportunities to think and communicate in ways that will help students construct a working knowledge of such content.

Examples illustrate the ways in which social studies learning follows from teaching that is meaningful, integrative, challenging, active, and value-based.

In practice, because the social studies are encompassing of other disciplines for which state curriculum frameworks are being developed, many districts may draw on those frameworks or on national standards in civics, history, geography and anthropology, with each bringing their own methodologies to bear. All standards discourage the memorization of isolated facts.

Common Themes: Learning for Understanding

Despite their differences, content standards emerging from professional associations share common themes. Proposed standards emphasize that students need to know the large concepts in each discipline and use higher-order cognitive processes as well as "basic skills" to make sense of these concepts. Thus, emerging standards envision learning that shifts toward a greater focus on thinking skills – reasoning, problem-solving, making connections, communicating – as the context for learning basic skills and facts. Likewise, they assume inquiry-based learning that requires students to take knowledge of concepts and facts in a discipline and pose questions that arise from that knowledge to be explored.

Emerging standards aspire to be guides to teaching and learning experiences that explore big ideas and essential questions in the disciplines. They aim to engage students in experiencing and understanding the disciplines' bodies of knowledge and a set of dynamic ideas rather than as a collection of facts. They often suggest performance tasks that allow students to demonstrate understanding through exhibitions, projects, demonstrations, or portfolios, and they often include exemplary pieces of student work.

The common thread linking emerging standards for the middle grades is the thread of learning and teaching for understanding. As defined by Harvard University's Teaching for Understanding Project, understanding is "a matter of being able to do a variety of thought-demanding things with a topic – like explaining, finding evidence and examples, generalizing, applying, analogizing, and representing the topic in a new way" (Perkins and Blythe, 1994, p. 4). In all disciplines, standards for the middle grades value such understanding, whether the topic is geometry, slavery, photosynthesis, or autobiography. Used to shape teaching and learning, this value would break new ground for most middle schools.

Ultimately, however comprehensive or path-breaking they are, standards by themselves can not work the magic of school reform. In a comment that applies to emerging standards in all disciplines, one member of the NCTM Board of Directors, Francis Fennell, notes:

> It would be my hope that readers of the Standards are caused to reflect on the mathematics they teach (curriculum standards), how they teach it (professional standards), and how it is assessed (assessment standards). If this would happen, the mission would be accomplished. The Standards (all of them) are guideposts, not blueprints.

Why Should the Middle Grades Pay Attention to Standards?

The publication of standards does not in itself persuade educators of their value for practice. In fact, for many middle grades educators, it is far from obvious that standards-based reform is desirable or necessary. From the perspective of the doubters, standards-based reform seems to threaten the student-centered principles of middle level education as well as the middle school structures that allow these values to thrive. These educators suspect that such reform will reinforce the standardization of curriculum and instruction that precludes greater individualization of learning and ignores the developmental diversity of young adolescents by requiring classrooms characterized by lock-step coverage of curriculum.

For some skeptics, standards-based reform implies the imposition of curricula imposed "from above," depriving school-level educators of their sense of professionalism. As one educator who directs a nationally known teacher development program writes, "I'm wary of anything that doesn't have the informed involvement of the rank and file of folks who are going to have to implement it." Another reformer notes the "growing dismay on the part of the public" over top-heavy public education policy and suggests, "It all may eventually come crashing down, but at great cost to everyone."

For others, standards represent an imposition of Euro-centric norms on an increasingly diverse population of students, threatening to alienate the very students whose engagement with schooling is already the most tenuous. As one middle grades reformer notes:

> I ask myself: Who named these standards? What are they after? Who benefits from the standards? and so on. In virtually every case on the list, we are talking here of White, upper middle class academicians whose version of worthwhile knowledge and skills is of the dominant culture, a hegemony that the standards are primarily intended to protect...Yes, I believe in high expectations. Yes, I want young people to be knowledgeable and skilled. Yes, I know there are tests they must get through. But what does this have to do with these standards?

Considering such objections, do middle schools and their students have anything to gain from standards-based reform? Does standards-based reform hold out any promise for improving the educational experiences and outcomes for middle grades students?

Student Achievement in the Middle Grades

The status of achievement and academic experiences of eighth graders represents a beginning point for thinking about the potential for standards-based reform in the middle grades. If nothing else, what we know about the student achievement of young adolescents suggests that we must use the best guideposts available to establish a press for achievement, expand access to knowledge, and enrich teaching and learning. National Assessment of Educational Progress (NAEP) data on achievement in the middle grades reported by the National Center for Education Statistics (1992a, 1992b, 1994) and the Educational Testing Service (1994, ND) reveal striking, and mixed, patterns and gauge the gaps between current and desirable student learning outcomes. Standards for the middle grades post the way to closing those gaps.

Reading Achievement

Eighth grade performance in reading is virtually frozen at mediocre levels for most students. Specifically:

- In both 1992 and 1994, only 28 percent of all eighth graders scored at or above the proficient level, meaning they could move beyond surface understanding of a text or multiple texts to extend the meaning of text, make inferences about characters and themes, link generalizations to specific details, support their opinions about text, objectively recognize an author's intention, and use a document to solve simple problems.

- Forty-one percent (41%) of eighth graders read at the basic level, meaning they could understand passages representing familiar genres, identify literal information, recognize central themes, identify the purpose of practical documents, interpret and describe character traits, and connect information from across text. Responses to literary, informational, and practical text at the "basic" level were largely confined to simple reactions or personal opinion.

- Thirty-one percent (31%) of eighth graders scored below the basic level on the reading tasks assessed. In addition, dramatic disparities between advantaged and disadvantaged middle grades students also persist within this uninspiring overall context. For example:

- While 50 percent of eighth graders from advantaged urban areas scored at the proficient level, only nine percent (9%) of eighth graders from disadvantaged urban districts scored at this level.

- Students from disadvantaged urban areas (57%) were more than four times as likely to score below basic levels as eighth graders from advantaged urban areas (13%) and twice as likely to score at this lowest level as students from extreme rural communities (27%).

- In both 1992 and 1994, considerably fewer African American (8%) and Latino (11%) eighth graders scored at or above the proficient level than White students (34%). Moreover, in 1994, more than twice as many African American (54%) and Latino (51%) eighth graders as White students (22%) in eighth grade scored below the basic reading level.

Proficiency in Writing

In contrast, writing achievement is improving in the middle grades. NAEP data report specifically that:

- Despite declines in writing performance during the 1980s, writing among eighth graders improved significantly between 1990 and 1992, a gain shared by students in all quartiles.

- White, African American, and Latino eighth graders all made significant gains in writing between 1990 and 1992.

However, NAEP score data alone do not describe exactly what eighth graders know and are able to do. Further analysis provides a clearer picture of student achievement in writing in the middle grades, and that picture is more mixed. For example, in 1992:

- Only twenty-five percent (25%) of eighth graders could prepare a written response considered "complete and sufficient;" that is that they could use ideas and information necessary to the assigned task in ways that were considered

effective in achieving the desired purposed. Two percent (2%) surpassed that standard.

- Seventy-five percent (75%) of eighth graders reached or surpassed a level of writing described as "Beginning Focused, Clear Writing," with results comparable to 1984 and a strong improvement over 1990.

As in reading, achievement disparities by ethnicity characterize eighth grade writing proficiency. For example:

- Despite gains for all groups of students, the percentage of White eighth graders (28%) writing at the "complete, sufficient" level was double that of African American (13%) and Latino students (16%) scoring at that level.

- Forty-two percent (42%) of African American and 33 percent of Latino eighth graders scored below the "beginning focused, clear" level, compared to 20 percent of White eighth graders.

- The writing performance of eighth graders scoring in the lowest quartile remains inferior to that of fourth graders scoring in the top quartile.

Overall, then, eighth grade literacy achievement is clearly mixed, with static performance in reading and improvements in writing.

Achievement in Mathematics

Mathematics achievement in the middle grades, like mathematics learning over all the grades, reflects somewhat more positive trends. According to NAEP data, average performance for 13-year-olds has improved slightly overall in recent years, and in 1992, it was significantly higher than in 1986. Moreover, while gains have been made at all levels of proficiency, with achievement improving in upper, middle, and lower quartiles.

This positive news, however, is offset by other indicators. For example, more recently, between 1990 and 1992, 13-year-olds in the middle quartiles accounted for much of the gain reported, with little improvement reported for students scoring in the lowest quartile. In addition,

average mathematics proficiency for 13-year-olds scoring in the middle quartile only slightly exceeds that of 9-year-olds scoring in the upper quartile.

Despite positive trends, mathematics learning in the middle grades, like literacy patterns, reflects disparities between advantaged and disadvantaged students. According to the National Center for Education Statistics (1994), for example, the performance gaps between rich and poor, and White and minority students remain wide. Specifically:

- Between 1986 and 1992, only White 13-year-olds significantly improved their math achievement, resulting in an increase in achievement disparities between White middle grades students and their African American counterparts.

- Although the gaps in math achievement narrowed after 1973, progress in narrowing the gap between White and African American 13-year-olds has stalled since 1986, and between White and Latino 13-year-olds since 1982.

- Even when scores improve, these gaps are wider than when student achievement is assessed in fourth grade.

What does it mean to be proficient in math in the middle schools? NCTM *Standards* envision students who know math facts and concepts and can apply this knowledge in order to reason, communicate, and solve problems. NAEP data tell us that increasingly, 13-year-olds are performing better in some areas, while stagnating in others. For example:

- 1992, 78 percent of all 13-year-olds demonstrated a surface understanding of the four basic math operations and were beginning to develop reasoning skills (an increase from 65 percent in 1978). However,

- Only 19 percent of the 13-year-olds assessed in 1992 demonstrated better numerical reasoning or were able to draw from a wider range of mathematical areas including geometry and algebra. The percentage of students able to engage in this level of "moderately complex procedures and reasoning" has remained unchanged since 1978.

As in reading, wide disparities persist in these areas as well. Thus, in 1992:

- While 85 percent of White 13-year-olds demonstrated understanding of numerical operations and beginning problem-solving, 51 percent of African American and 63 percent of Latino 13-year-olds performed at this level.

- Nearly one fourth (23%) of White 13-year-olds could demonstrate moderately complex math procedures and reasoning; by comparison, only four percent (4%) of African American and seven percent (7%) of Latino 13-year-olds could do so.

Overall, achievement data for eighth graders in literacy and mathematics are mixed. In both areas, data point to small numbers of eighth graders scoring at high levels, while others languish at the basic levels. But however the overall picture is viewed – as good news or bad – persistent low performance among many eighth graders, especially those most vulnerable students, remains alarming. Many low-performing students will leave the middle grades believing that they are prepared for the advanced learning necessary for their futures. With only limited knowledge and skills, few will be able to realize that belief. The assumptions behind the "standards movement" insist that young adolescents deserve better.

The Potential of the "Standards Movement" for Middle School Reform

The status of student achievement and academic experiences in the middle grades suggests a number of reasons to pursue standards-based reform, both for the promises it holds out for students' achievement and the groundwork it lays for changes in the context factors of schooling that contribute to student performance.

Standards-Based Reform Can Formalize High Academic Expectations for All Students

Standards can make concrete the expectation that all students can learn to produce work of high quality. Despite words to the contrary, public schools have failed to convey such expectations in a consistent way. At the middle grades level, in fact, we have often communicated distinctly mixed messages about what we can expect from students.

On one hand, the middle school movement has argued strongly for education that is "developmentally appropriate." Advocates for middle schools have rightly insisted on school structures that foster a sense of belonging, confidence, and self-esteem in their young adolescent

students, and that support multi-faceted learning, meaningful participation in school life, and positive social interaction with adults and peers. Yet, in the attempt to create schools that attend to these needs, middle school rhetoric often includes references to students as being "a little brain dead." In the absence of information to the contrary, those who work most closely with young adolescents may come to see them as students who "struggle more with their grades, because physically their bodies are concentrating on puberty and not allowing enough brain power for studying." As one teacher asserts, "Eighth grade students, in particular, are driven by hormones; anyone who doesn't realize this has not dealt with them." When these views prevail, young adolescent students may find themselves in schools with an unnecessarily narrow vision of what they can accomplish academically.

Recent research refutes the myths that support the stereotype of young adolescents as captives of "raging hormones." Keating (1990), for example, reports little evidence for the notion that a leveling off of brain growth contributes to academic stagnation in early adolescence. Challenging the theory that students should not be exposed to opportunities to develop logical or critical thinking until they have reached a particular stage of maturation, he notes, "Supportive contexts and early attention to the development of reasoning are precisely what is required to increase the likelihood it its emergence" (p. 59).

A "supportive context" includes knowledge of content, and current cognitive research emphasizes that students must have a knowledge base in content subjects about which to reason. As Keating reports, "It seems most likely that progress in logic among adolescents will occur when it is embedded in, rather that separated from, knowledge of content or subject matter" (p. 66). He also observes that without a solid basis of fundamental skills in literacy and numeracy, and reasonable levels of knowledge in core domains, the prospect for developing more advanced levels of reasoning seem remote.

The promise of standards, then, is in their thrust toward developing curriculum and instruction that balance knowledge and learning processes, information and thinking skills in challenging ways. Emerging standards state clearly that such complex learning can be expected of all students. In the draft science education standards, for example, the National Research Council of the National Academy of Science (1994) observes:

> At grades 5-8, students can begin to recognize the relationship between explanation and evidence, that background knowledge and theories guide the design of investigations, the types of observations and the interpretation of data...Research indicates that with an appropriate curriculum and adequate instruction, middle school students can develop the skills of investigation and the understanding that scientific inquiry is guided by knowledge, observations, ideas and questions (p. V-71).

The vision of the National Council of Teachers of Mathematics for middle grades learning applies to other disciplines as well. As NCTM states:

> As vast changes occur in their intellectual, psychological, social, and physical development, students in grades 5-8 begin to develop their abilities to think and reason more abstractly...From [concrete experiences] they abstract more complex meanings and ideas. The use of language, both written and oral, helps students clarify their thinking and report their observations as they form and verify their mathematical ideas (p. 68).

The learning envisioned by proposed standards is a learning for understanding that develops skills that transfer across disciplines and real-life situations through the study of "high content." Young adolescents are capable of such learning. Standards-based reform can shift the ways in which educators view their students and their intellectual capacities in the direction of higher expectations for all.

Standards-Based Reform Can Set Criteria for More Challenging Classrooms in the Middle Grades

Standards can also support efforts to improve teaching and learning that, first, enriches curriculum content across the board and, second, expands access to improved learning to all students, especially those who have been traditionally excluded from such learning. The current status of middle grades schooling falls short of reaching these objectives.

Data from the National Assessment of Educational Progress reveal that traditional practices still prevail in the middle grades, often to the detriment of student achievement.

In Reading and Writing

For many eighth graders, the reading experiences associated with higher achievement often are not a major part of their learning. Specifically:

- Reading self-selected books in school is associated with reading fluency; however, 60 percent of eighth graders report they are provided with class time for reading books of their own choosing less than once a week.

- Higher reading achievement in eighth grade is associated with silent reading during instruction at least once a week

(although the amount of time is not specified). In eighth grade, 47 percent of all students report reading silently every day; however, 16 percent of eighth graders engage in this activity less than once a week.

- Writing in response to reading has gained support over the last decade in the belief that asking students to respond to reading with a written reaction resembles real-world types of reading responses; however, only 18 percent of eighth graders report they do such writing on a daily basis, and 45 percent report such writing activity less than once a week.

- Twenty-seven percent (27%) of eighth graders reported working in a reading workbook or worksheet almost every day; 35 percent reported doing so at least once a week; and 38 percent reported doing so less than weekly. Although using workbooks or worksheets daily is associated with higher levels of reading in fourth grade, this activity is associated with lower proficiency in twelfth grade, and appears to have no impact in eighth grade.

- Higher achievement in eighth grade is associated with reading as a social activity for discussion with friends and family; however, almost one-third (32%) of eighth graders report never having such discussions and only 41 percent of eighth graders (compared with 62 percent of fourth graders and 55 percent of twelfth graders) report having such discussions at least once a week.

- Significantly more eighth graders attending high-performing schools read from information books and magazines than their counterparts in low-performing schools who read mostly from storybooks.

In writing, practices associated with improved achievement are gaining ground. On the whole, more eighth graders report writing for personal reasons. Forty-five percent (45%) report writing letters to friends, 29 percent keep weekly journals, and 17 percent write stories or poems at least weekly on their own.

Moreover, eighth graders continue to use a variety of revising and editing strategies in school, with effects on achievement depending on the strategies used. For example, 1992 NAEP data report that:

- Higher achievement is associated with editing strategies including correcting grammar mistakes, changing words, and moving sentences or paragraphs more than half the time; however, about one-sixth of all eighth graders report that they use these strategies less than half the time, and about seven percent report ever or hardly ever using them.

- Lower achievement in eighth grade writing is associated with throwing out papers to start over again more half the time; 26 percent of all eighth graders use this strategy half the time.

- Access to the technology that aids in revisions is also associated with better writing. Eighth graders who reported that they used a computer to write stories or papers outperformed students who said they did not.

Higher or lower achievement in eighth grade writing is also associated with teacher practices in response to writing. In 1992, higher percentages of students reported teachers commented on the ideas in their papers, the ways they explained their ideas, they way they expressed their feelings, and the words they used more than half the time. In addition:

- Higher achievement occurred among students for whom:

  - teachers wrote notes on their writing about their ideas;

  - teachers marked their mistakes or pointed out what they had done well more than half the time;

  - teachers commented less than half the time on the way students followed directions or the amount they wrote;

- Lower achievement occurred among students for whom teachers commented on the way they followed directions or the amount they wrote more than half the time.

In grade 8, higher achievement is also associated with students' beliefs about their own writing, which may develop from their assignments, responses from teachers, or both. Students who agreed that writing helps them think more clearly, tell others what they feel, and understand their own feelings more than half the time outscored students who never or hardly ever found these statements to be true.

While it is fashionable to attribute weak literacy skills to such strategies as reading-writing-response workshops, these practices in reality shape the learning experiences of only some eighth graders. At the same time, it is probable that direct instruction in reading may be virtually absent from the middle school program. Allington (1994), for example, reports that direct reading instruction accounts for only about ten percent of the *elementary* school day, suggesting that middle grades students experience such instruction even less of their time in school.

In Mathematics

Certain practices and conditions for teaching and learning in mathematics are also associated with higher achievement. However, access to those practices and conditions is not consistent for all middle grades students, and math does not even seem to be a priority for many middle grades students. As *Reaching Standards: A Progress Report on Mathematics* prepared by the Policy Information Center of the Educational Testing Service (Lindquist, Dossey, and Mullis, ND) reports, about one-third of eighth graders are in schools that do not give any special priority to mathematics. What's more, compared to fourth graders, eighth graders spend more homework time, but less in-class instructional time, on mathematics.

ETS researchers further note that despite NCTM recommendations, a minority of students still have only limited experience with higher-order learning in math, and teachers are still emphasizing facts and procedures, with most work dependent on textbooks and worksheets. For example, based on findings from 1992 NAEP data:

- According to their teachers, 76 percent of eighth graders receive heavy instructional emphasis in learning facts and concepts, and 79 percent are receiving instruction that puts heavy emphasis on learning skills and procedures.

- Forty-four percent (44%) of all eighth graders agree with the statement that "learning mathematics is mostly memorizing" while 26 percent are "undecided;" only 30 percent disagree.

- Virtually all (95%) of eighth graders work from textbooks at least weekly, and two-thirds (64%) do problems on worksheets that frequently.

Moreover, despite the NCTM recommendations that students engage in activities that emphasize math as communication and reasoning:

- Less than five percent (5%) of eighth graders were asked to write reports or do mathematics projects each week.

- Although about 75 percent of eighth graders reported at least weekly participation in oral discussion about solving mathematical problems, only about 20 percent were asked as frequently to write a few sentences about how to solve math problems.

- Although most eighth graders are tested on math weekly, only about one-quarter are exposed to assessments that emphasize in-depth explanations through projects, portfolios, or presentations, even monthly.

- Only 19 percent of the eighth graders reported their tests required them to offer detailed solutions to math problems they had not worked previously.

- Only about five percent (5%) of eighth graders could solve questions using diagrams (Researchers concluded that the remaining students either did not realize that diagrams can help solve problems or could not translate mathematical ideas into diagrams.).

The National Council of Teachers of Mathematics points out that math problems and the methods used for solving them have changed with technological advances and, for this reason, recommends expanded use of computers and calculators in schools. Specifically, in its *Curriculum*

and Evaluation Standards, NCTM recommends that appropriate calculators be available to all students at all times. Despite these recommendations, by 1992:

- Only 19 percent of eighth graders were permitted free and open use of calculators. Thirty-four percent of eighth graders were permitted to use calculators when taking tests.

- Teachers also reported that 22 percent of eighth graders were never asked to use a calculator in mathematics class.

Limited access to calculators may, in part, reflect tight budgets and, in part, attitudes of teachers toward their use. In a survey of mathematics teachers, NCTM found that 35 percent of teachers in grades 5-8 did not agree that "Students should be able to use calculators anytime other than when practicing basic calculations" (NCTM, 1992). In fact, American 13-year-olds are less likely to use calculators in school than their peers in many European and developed Asian countries (National Education Goals Panel, 1994).

NCTM *Standards* also recommend that every classroom have a computer for demonstration purposes; every student have access to a computer for individual and group work; and all students learn to use the computer as a tool for processing information and performing calculations to investigate and solve problems. As of 1992, according to the National Education Goals Panel:

- Only 20 percent of eighth graders had computers in their classrooms, and;

- Only about eighth percent (8%) worked with such mathematical tools as measuring instruments or geometric solids.

Finally, according the National Education Goals Panel, classroom practice appears to fall short of NCTM recommendations in other areas: In 1992, substantial numbers of eighth graders were still not receiving any instruction in mathematical reasoning, problem-solving, and communicating.

Taken together, these findings go a long way toward explaining why 50 percent of all eighth graders may be bored more than half of their school day (Lounsbury and Clark, 1990). Despite changes in some areas, the NAEP data alone signal that many middle grades classrooms are still places where students work at rote tasks from textbooks or worksheets and where challenges in problem-solving and applying understandings in subject areas to real world situations are still few

and far between. A reform strategy that takes its cues from emerging standards holds out the promise of expanding the use of those practices associated with higher achievement in the middle grades.

Standards-Based Reform Can Stimulate Expansion of Challenging Learning to All Students

Even where more achievement-oriented practices are making inroads, too many poor, African American, and Latino students still have little or no exposure to these practices. These students often find themselves in schools characterized by low expectations, limited resources, and a thin curriculum that matches those expectations and resources. Even in more advantaged schools, these students are most likely to find themselves in the lowest ability groups and tracks, including resource rooms, where the practices associated with standards-based reforms leading to high achievement are absent or infrequently used.

Such unequal access is prevalent at all levels of schooling, including in the middle grades, depending on the school students attend or students' social standing. For example, Oakes and her colleagues (1990) found wide variations in students' access to gatekeeping science and mathematics courses, with students in middle class schools far more likely to be placed in these courses. Likewise, an analysis of data from the U. S. Department of Education National Educational Longitudinal Survey (NELS:88) found that low-income, African American, Latino, and Native American eighth graders were more than twice as likely to be in remedial courses than their White or middle-income peers (Braddock, 1990).

Johns Hopkins researchers Epstein and McIver (CDS Report 33) further analyzed NELS:88 data and found persistent inequalities in access to eighth graders' in-class opportunities to learn in challenging ways. Overall, they found that a schoolwide emphasis on higher-level instruction and active learning were still the exception to the norm of basic skills instruction. Within this context, they also found that schools serving more white-collar families were more likely to use writing and editing practices and provide experiences with literature than schools with more disadvantaged students, which relied on more drill and practice and more oral presentations. Likewise in schools with more advantaged students, students had greater access to hands-on laboratory work in science than in low-income schools which, again, offered more drill and practice.

More recent data from the National Assessment for Educational Progress describe the persistence in unequal access to the content and classroom practices associated with high achievement and opportunity to learn in mathematics. As in earlier years, NAEP data shows that although higher achievement is associated with placement in higher level courses, schools enrolling high percentages of poor students are less likely to offer these courses than those with more advantaged populations. For example:

- Across the country, about 20 percent of eighth graders are enrolled in algebra, with another 28 percent enrolled in pre-algebra, giving them access to a college preparatory math program in high school. However:

- In the top performing third of schools, 59 percent of eighth graders are enrolled in algebra or pre-algebra, while only about one-third (35%) are enrolled in these courses in the bottom performing third.

Access to algebra in eighth grade is the country's gatekeeper to studying calculus in twelfth grade, a course that currently enrolls about ten percent (10%) of seventeen-year-olds, but only four percent (4%) of Latino and seven percent (7%) of African American of this age. Although NAEP reports increasing enrollments in pre-algebra in eighth grade, enrollment in algebra remains static.

Likewise, classroom conditions continue to affect students differentially. For example, higher achievement is associated with enrollment in math courses taught by teachers with advanced mathematics training. However:

- Inner-city schools are less likely to employ teachers with advanced mathematical training.

- The proportion of certified math and science teachers in urban districts is typically lower than state averages for these subjects.

As for access to tools and materials that foster the kinds of learning envisioned by the NCTM *Standards*, most middle schools still offer their students only four-function rather than scientific calculators. Moreover:

- NAEP reports that eighth-grade teachers say they use calculators least frequently with their low-ability classes.

- While 16 percent of White eighth graders lack access to school-owned calculators, 27 percent of African American and 28 percent of Latino students lack such access.

Using standards to shape curriculum offerings offers a promising strategy for expanding access to important knowledge to all students, especially those enrolled in disadvantaged schools.

Indeed, these students may have the most to gain from standards-based reform designed to prevent a slide into a low-expectations curriculum. It is well known that poor, African American, Latino, and immigrant students run particular risks of experiencing what Richard deLone (1979) has called such "discrimination by expectation." This kind of discrimination can be so powerful that even schools that have traditionally offered a strong academic program may fall prey to lowered expectations when community demographics shift and student enrollment becomes progressively poorer or reflects increasing percentages of minority students.

Absent a steady focus oriented to standards, these lower expectations often translate into the thinning out and de-skilling of curriculum. For example, Bissinger (1994) chronicles a school in suburban Chicago where, in a context of rapid "white flight," teachers virtually "gave up" on their African American students, giving in to low expectations and watered-down curriculum. Likewise, Ennis (1994) has documented how even physical education teachers change their program in a context of changing demographics, moving from a curriculum based on knowledge and skills to one focused on motivation and order.

School adoption of standards for content, performance, and opportunity to learn can offer some protection against a diluting of curriculum. Instead, standards documents reinforce a thrust for challenging curriculum for all middle grades students. According to NCTM *Standards*:

> Mathematics educators and others must realize that this broad, rich curriculum is intended to be available to *all* students. No student should be denied access to the study of one topic because he or she has yet to master another. The current curriculum excludes many students from appreciating the useful, exciting, and creative aspects of mathematics. The 5-8 standards outline a curriculum that attempts to give all students the opportunity to appreciate the full power and beauty of mathematics and acquire the mathematical knowledge and intellectual tools necessary for its use in their lives (p. 69).

Just as this criteria applies to the learning of all students within schools, it applies to such learning across all schools within a district. This lesson has special relevance for urban middle schools that seek to provide equal access to knowledge across an entire district where, frequently, such access is erratic. For example, Moore and Davenport (1989) in their study of four urban districts describe how a system of magnet or selective schools can expand or narrow access to meaningful opportunities to learn, with some schools providing a curriculum that prepares students for further learning and others serving as "holding tanks" until the moment when they leave school altogether. In such a system, standards vary considerably from school to school. The value of standards-based reform in such districts is to insist that students will all have access to high-opportunity curriculum regardless of the school they attend.

Standards are no guarantee against prejudice or the sorting of students in ways that result in cross-school or in-school resegregation. However, the adoption of standards that apply to learning for all students and for every middle school within a district can establish a common vision that communicates a commitment to offer equal access to knowledge to all students. In this context, standards can keep the attention on content and keep teachers focused on the questions: "What learning do all students have access to in this school?" and "How does student learning compare with our best descriptions of what all students should know and be able to do with knowledge in the disciplines?"

Standards-Based Reform Can Offer a Framework For Authentic Pedagogy

A fourth promise of a standards-based strategy for middle grades reform lies in the assumption that curriculum content focused on important concepts and complex themes in each discipline is inextricably linked to more diverse teaching strategies. Repeatedly, emerging standards assert that students learn "for keeps" by applying knowledge, reasoning, communicating, and solving problems. These expectations for learning necessitate learning assignments and teaching strategies that go beyond transmission of information to include more active learning and long-term projects.

But some have argued that such changes must be even deeper if students are to produce work that is of high quality. They point out that use of manipulatives, cooperative learning, and small group discussions can themselves vary in their application. For this reason, recent research has begun to focus on the impact of "authentic pedagogy" on student work (Newmann, Marks, and Gamoran, 1995). Drawing from learning theories that undergird standards-oriented reform proposals, authentic pedagogy includes instructional activities that not only involve active learning but are also grounded in intellectual quality.

The four components of authentic classroom instruction reflect much of what is assumed in proposed standards for the middle grades. These include higher order thinking, substantive conversation, deep knowledge, and connections to the world beyond the classroom. In addition, authentic pedagogy's six standards for assessment tasks require students to draw on disciplinary knowledge, demonstrate the higher-order skills, and prepare work grounded in life beyond the classroom for an audience beyond the school. These standards, like those for classroom instruction, are compatible with the tenets of emerging standards.

Based on an examination of student scores on NAEP-based tests and pieces of student work, researchers discovered strong evidence that authentic pedagogy could strengthen student achievement at all levels, including in the middle grades. Using a statistical technique that allowed them to describe the effect of authentic pedagogy beyond the influence of students' social and academic backgrounds, researchers found that depending on an "average" student's exposure to high or low degrees of authentic pedagogy, he or she could fall into the test's 60th or 30th percentile, or

somewhere in between. Although students with high initial test scores were slightly more likely to receive authentic pedagogy, even in schools that had substantially reduced the use of ability grouping, all students benefitted from classrooms where teachers used authentic pedagogy.

Authentic pedagogy appears to offer enormous potential for putting proposed standards into practice. Standards for authentic pedagogy clearly require the focus of teaching and learning to be on student work, with performance tasks and assignments resulting in products enlivened by their intended use outside the school. The goal of authentic pedagogy of teaching for understanding enhances learning for understanding. To the extent that standards establish a context for authentic pedagogy in the middle grades, standards-based reform offers significant promise for boosting student achievement.

Standards-Based Reform Can Clarify the Purposes of Restructuring

By setting out a vision for high-quality learning for all, standards can amplify and deepen the answers to the "What for?" question that many parents and observers ask about many middle grades practices. Middle schools, especially those that are moving from a traditional junior high school organization toward practices associated with the middle school model, often treat middle school structures – teacher teams, block scheduling, and teacher advisories – as ends in themselves. Frequently, they explain these structures solely in terms of meeting the "developmental needs" of young adolescents. In the process, they sometimes view these structures as the end point rather than the beginning of reform to bring about meaningful student achievement.

Urban middle schools, in particular, sometimes go one step further, and in the interest of meeting student needs, attach a wide variety of "add-on" programs to the core instructional program. At worst, the "add-ons" accrue with little innovation and in the absence of coherent planning; at best, schools accumulate multiple "add-ons" to become what Bryk (1993) has named "Christmas Tree" schools, showcases of activities supported by extra programs, materials, and resources. Analyzing K-8 schools in Chicago, Bryk and his colleagues found that while such schools appeared to be engaged in reform, teachers in such schools actually had little time to examine the quality or effects of the schools' programs. And since teachers in these schools did not connect poor student performance to a need to change their practice, school improvement efforts rarely focused on core instruction.

In contrast, Chicago schools that adopted a more "systemic" approach to reform, were more likely to focus on changes in classroom practices and maintain attention to changing these practices. Even more important, schools with systemic approaches to change proved to be twice as hospitable to authentic pedagogy as those schools with more haphazard, "add-on" efforts. Specifically, 64 percent of the "systemic change" schools reported a moderate or extensive use of authentic learning practices compared to 31 percent of schools with unfocused approaches.

Standards-based reform, then, offers an alternative to the "add-on" reforms common in many districts. In fact, putting standards at the center of reform can stimulate a paring down of "add ons" so that remaining programs, including after-school tutoring or "high content" co-curricular classes, take their purpose from the standards and reinforce the core purposes teaching and learning at higher levels.

Standards-Based Reform Can Strengthen Middle School Structures

Attention to standards also has promise for strengthening a number of structures and practices that characterize the middle school model.

School-Based Management/Shared Decision-Making

Recent research suggests how a focus on standards can enhance governance structures associated with successful middle schools. In a study of 44 schools in 13 school districts, Wohlstetter (1995) found that schools that implemented school-based management in a context of curricular guidelines – whether developed at the district, state, and national levels – strengthened the impact of their work by creating stronger direction for reform of curriculum and instruction. Many of the 500 educators interviewed said that curriculum guidelines in the form of performance standards, curriculum frameworks, or assessment systems helped them in two ways: (1) by specifying the "what" of the curriculum, leaving the "how" up to them, and (2) by setting boundaries within which schools could create their own visions or improvement plans.

This is not to say that standards by themselves create change. Other ingredients important to change included:

- The presence of many teacher-led decision making groups so that the school council was not the only structure for shared decision making;
- Professional development opportunities in curriculum, instructional practices, and assessment approaches in addition to group process skills;
- A system for sharing information about student performance, parent and community satisfaction, and about school programs and resources with school staff, parents, and community members.

- Ways to reward staff behavior that helps to achieve school objectives.

- Leadership that was able to facilitate and manage change with out dominating discussion or overly directing it.

However, those interviewed noted that without a framework to focus on curriculum or instructional issues, school-based management conversations tended to focus on procedural or power-based issues, distracting them from their focus on student achievement.

Interdisciplinary Teacher Teams

The organization of teachers into teams working with smaller clusters of students is a hallmark of the middle school movement. Benefits of teaming are considerable: Teams can provide a structure for common planning time for teachers, consistency of student-to-teacher and student-to-student relationships, and a sense of belonging that reduces isolation and anonymity, especially in large schools. However, successful teaming can undermine goals of schoolwide reform.

For example, taking a close look at four fully-teamed middle schools, researchers from the University of Wisconsin found that teaming could also limit teachers' time for and loyalty to whole-school issues (Kruse and Louis, 1995). In these schools, the more teams took on their own personality and the more autonomous their roles in developing curriculum and instruction, the more teachers risked losing sight of a common standard for students and avoiding collective responsibility for student work.

The development of a commitment to a set of standards for what all students will know and be able to do with that knowledge when they leave eighth grade can be a potential antidote to the tendency to teams to become structures unto themselves. Such a commitment has the promise of binding disparate teams together under schoolwide purposes and goals.

Multi-Ability Grouping

During the 1990s, the middle school movement has admirably been in the forefront of advocating a shift away from rigid ability grouping and tracking. In doing so, many schools have implemented challenging learning for all students in heterogeneous classrooms. Many have also encountered resistance of parents and teachers who assume that "untracking" will mean a watering down of curriculum. In particular, parents of students labeled "gifted" often hold out for segregated "top level" classrooms in the belief that such settings represent their only guarantee that their

children will experience challenging academic learning opportunities. In short, they do not trust the heterogeneous "mainstream" to foster high achievement.

Heterogeneous classes can benefit students of all performance levels when schools apply the expectations and learning opportunities available to "top level" students to all students in multi-ability classrooms (Wheelock, 1992). However, analysis of NAEP results suggests that teaching in mixed-ability classrooms may match high-ability classrooms on only some of the standards recommended for powerful mathematics learning (Coley, 1994). On one hand, teachers of mixed-ability eighth grade math classes matched teachers of high-ability classes in their emphasis on mathematics facts and concepts and on skills and procedures to solve problems. However, while 72 percent of students in high-ability classes received instruction that emphasized developing reasoning skills to solve unique problems, only 38 percent of students in mixed-ability classes received this emphasis. In addition, only about one-third of the eighth graders in mixed-ability classes experienced strong emphasis on communicating math ideas effectively compared to about one-half of their peers in high-ability classes.

Standards-based reform could strengthen the implementation of heterogeneous classrooms in middle schools. In schools where special constituencies challenge mixed-ability grouping, standards can offer reassurance that middle schools take the schooling of all students seriously. Moreover, attention to standards for what all students should know and be able to do can provide guidance for curriculum and instruction in multi-ability classrooms and afford protection against the watering-down of curriculum in those classrooms. Within a context of standards-based reform, heterogeneous classrooms can offer high expectations for exemplary work and opportunities to learn equal to that of "high ability" classrooms.

Standards-Based Reform Can Help Realize Students' Own Aspirations

Young adolescents of all backgrounds dream of a post-secondary education. To the extent that a standards-based reform strategy points toward classrooms where students engage in in-depth inquiry about questions in the disciplines, process information to solve problems, communicate multiple solutions to multiple audiences, and apply knowledge to situations beyond the school walls, standards-based reform represents substantial hope for preparing young adolescent students to realize their own dreams.

However, many middle schools are not organized around the goal of ensuring that all their students will be prepared for a high school program that will lead to some kind of post-secondary education will be open to all students. Absent this focus, many students leave the eighth grade without the knowledge and skills that steer them where they want to go. For example, Wheelock (1992) reports:

- According to data gathered from the U.S. Department of Education's National Educational Longitudinal Survey of 1988 eighth graders (NELS:88), a majority of eighth graders plan to attend college, but only 29 percent intend to take college-preparatory courses in high schools.

- Eighth graders from all social groups voice equally high aspirations for college enrollment, and their parents share these aspirations.

- A study by California's Department of Education found that although two-thirds of the state's sophomores aspired to a goal requiring at least four years of college, many were not enrolled in courses that would prepare them for college. In fact, nearly half of all students taking general-education courses rather than college-preparatory ones had career goals that required a college degree.

Some form of post-secondary education beyond a high-school diploma, whether technical or commercial school, community college, four-year college, or university, is a necessity for anyone who will enter adulthood at the turn of the century. In the middle grades, this means students must experience an education that sets a foundation for life-long learning. As Secretary of Labor Robert B. Reich (1994) observes:

> What we've seen for fifteen years is that people who have only a high school degree or just a bit of training beyond high school have been on a downward escalator. People who have a college degree or better have been on an upward escalator, not the kind you found in the 1950s, 1960s, and early 1970s, but it's been gradual. That gap is growing.

Recent income data highlight the payoffs for those with more education. For example, Washington, DC's Economic Policy Institute reports that between 1979 and 1989, college graduates experienced a 12.5 percent rise in income in terms of purchasing power. In contrast, during the same decade, high school graduates' purchasing power declined by nine percent, while the purchasing power of high school dropouts declined by 16 percent (Mishel and Bernstein, 1995). Moreover, college graduates used to earn about 30 percent more than high school graduates; they now earn 60 percent more (*New York Times*, 18 April 1995).

Employment patterns demonstrate how opportunities for meaningful work also improve with increased educational attainment. For example, as Reich (1994) reports, at the close of 1994, the unemployment rate was 5.9 overall, but stood at three percent for college graduates, nine percent for high school graduates, upwards of 12 percent for those with less than a high school degree, and up to 50 percent for teenagers out of school in America's central cities.

The message could not be clearer: The future welfare of our young people depends on educating all students at levels that will allow them to participate successfully in the emerging economy. As Reich (1994) notes:

> The point is that it is a global economy, it is a high technology economy, and our standard of living as Americans depends on what we add, how productive we are as individuals and as communities. A lot of Americans are not getting the kind of training and education they need to add that value.

Standards-Based Reform: "Adding Value" to Middle Schools

Given the organizational dynamics of schooling, a variety of factors syphon energy away from offering a high quality middle grades education to all students. Prejudice that fosters low expectations, differential expectations that result in unequal access to knowledge, confusion of innovative pedagogy with challenging content, assumptions about the normal cognitive development of young adolescents – all distract both educators and the public from the task of developing schools and classrooms that encourage all students to strive for higher achievement.

Schools that focus on "what all students should know and be able to do" and examine how well students understand and use that knowledge can offer students opportunities to learn that are unavailable in schools that lack this focus. Engaging in standards-based reform does not automatically guarantee improved student performance, but the strategy of adopting and using standards to guide change can add value to the already positive features of middle school life.

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